



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,324	06/27/2001	Osamu Samuel Nakagawa	10004808-1	3635

7590 03/27/2003  
HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER

SCHILLINGER, LAURA M

ART UNIT	PAPER NUMBER
----------	--------------

2813

DATE MAILED: 03/27/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/891,324

Applicant(s)

NAKAGAWA, OSAMU SAMUEL

Examiner

Laura M Schillinger

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 14-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

**This Office Action is in response to the arguments submitted in Paper No.5, dated 1/7/03.**

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-4 and 7-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Lou ('680).

In reference to claim 1, Lou teaches a method comprising:

Forming a first electrode in a first metal layer of the multi-level metallization device (Col.1, lines: 25-35 and Fig.6 (30a));

Depositing a substantially thin dielectric material layer over the first metal layer of the multi-level metallization device (MLMD) (Col.6, lines: 5-25 and Fig.6 (36)); and

Forming a second electrode on the second metal layer, wherein the second metal layer is formed substantially over the substantially thin dielectric layer (Col.6, lines: 25-30 and (Fig.6 (38))).

In reference to claim 2, Lou teaches further comprising:

Patterning the substantially thin dielectric material to substantially cover the first electrode (Fig.6 (36)); and

    Adjusting the thickness of the thin dielectric material layer (Col.6, lines: 5-25).

In reference to claim 3, Lou teaches wherein a dielectric constant of the thin dielectric layer is substantially high (Col.1, lines: 45-50 and Col.6, lines: 5-25).

In reference to claim 4, Lou teaches wherein the dielectric layer includes SiN (Col.6, lines: 5-25).

In reference to claim 7, Lou teaches further comprising:

    Depositing an ILD layer over the dielectric (col.4, lines: 10-25); and

    Etching at least one via adaptive to receive the second metal layer (Col.4, lines: 40-55).

In reference to claim 8, Lou teaches further comprising:

    Patterning the metal layer to form a second electrode (Fig.6 (38)); and

    Polishing the second metal layer (Fig.6 (38)).

In reference to claim 9, Lou teaches wherein etching the first electrode in a dielectric layer of the MLMD (Col.5, lines: 25-35).

Art Unit: 2813

In reference to claim 10, Lou teaches wherein the first electrode is formed in a parallel line configuration (Fig.5 (30a)).

In reference to claim 11, Lou teaches wherein the second electrode is formed in a parallel line configuration (Fig.6 (38)).

In reference to claim 12, Lou teaches wherein the dielectric is a composite (Col.6, lines: 5-25).

In reference to claim 13, Lou teaches wherein the composite comprises PZT and platinum (Col.6, lines: 5-25).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lou ('680).

In reference to claim 5, Lou fails to explicitly teach wherein the thickness of the dielectric layer is between 50 to 100 Å- however does teach that the dielectric is thin (Col.6, lines: 5-25).

Art Unit: 2813

In reference to claim 6, Lou fails to explicitly teach wherein the dielectric constant is between 4 and 100, however does teach that the dielectric constant for BST is high (Col.1, lines: 40-50 and Col.6, lines: 5-25).

These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and In re Aller, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

### ***Response to Arguments***

Applicant's arguments filed 1/7/03 have been fully considered but they are not persuasive. Applicant argues that Lou fails to teach forming a capacitor with a metal electrode. Applicant argues that Lou teaches to implement only doped amorphous silicon as electrode structures. However on Col.6, lines: 25-30, Lou teaches that the electrode structure may be made from metal rather than doped amorphous silicon. Consequently, Applicant's argument is unpersuasive.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M Schillinger whose telephone number is (703) 308-6425. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W Whitehead, Jr. can be reached on (703) 308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

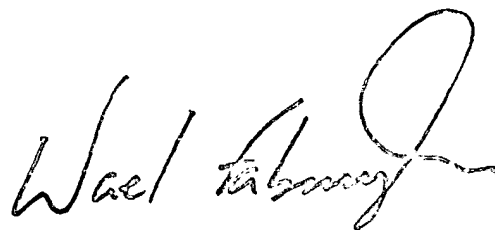
Application/Control Number: 09/891,324

Page 7

Art Unit: 2813

LMS

March 21, 2003

A handwritten signature in black ink, appearing to read "Wael Tabbara". The signature is fluid and cursive, with a large loop at the end.

SUPERVISORY PRIMARY EXAMINER  
TECHNOLOGY CENTER 2800